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The Hidden Regulation of Carbon Markets

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Abstract: *»Die versteckte Regulierung des Marktes für CO_2-Emissionen«*. This article tracks the creation and maintenance of markets for emission rights and the role that law-creation plays within this process. From a recent example of a market creation – the European Emissions Trading Scheme (EU ETS) –, insights will be gained about the intrinsic and fundamental connections between market creation and bureaucratization. This process unfolds in a paradoxical way: The free-market hypothesis is, in fact, *creating* a demand for regulation, administration, and control. Law creation that is informed by the free-market hypothesis (the Law and Economics School in general, the EU Directive as a specific case), separates the "inside of the market" from the "outside of the market." This, firstly, causes a need for extra-administration at the "outside of the market" in order to resolve the uncertainty that emanates from the self-imposed requirement of leaving "the market itself" unregulated. And it, secondly, exposes the "rational actor" to an open and uncertain situation, which then leads to private regulative and administrative attempts at the "inside of the market."

Keywords: Conventions, law, bureaucracy, European Union Emission Trading System, free-market hypothesis, efficiency.

1. Introduction[1]

Emissions markets are a scientific-regulatory project born in the 1970s in the US. Later, in the 1990s, market-based regulative mechanisms took off as a joint effort of the world community, which decided to fight a crucial threat to mankind: global warming. After the fall of the Iron Curtain, a turning point in global history, where the world's belief in bureaucracy and command-and-control regulatory mechanisms had been overly frustrated, mankind and democracy seemed to be better off with market mechanisms. Emissions markets thus represent the vision and the hope of leaving State bureaucracy and command-and-control mechanisms behind.

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Today, after four decades of "*in vivo* experiments" (Callon 2009, 536) with emission markets, more and more economists criticize the administrative burden, and the additional workload (in terms of transaction costs) that emission markets have caused (Mallard 2009; Jaraite et al. 2010); more and more observers would today prefer taxes over trading schemes (Wittneben 2009). It seems that the inevitable bureaucracy and work intensity of carbon markets (together with the problem of ongoing over-allocation) has caused some level of disillusion.

This article tries to understand how the free-market hypothesis in market creation and law design systematically produces what it wants to avoid. The argument is that the concept of the self-regulating market causes a hidden need for regulation at the "outside" *and* at the "inside" of the market. The separation between the economic and the non-economic in theory building is an artificial division with extensive practical and regulative consequences. The French pragmatic approach of economics of conventions aims at overcoming this analytical divide. It therefore offers a promising research perspective for understanding how market creation and maintenance unfolds.

Law creation is understood as a compromising attempt (Boltanski and Thévenot 2006) where the contradictions between different conventional worlds are bridged and merged (e.g. between the civic, the industrial, and the market in case of energy taxes). Still, at the moment when the free-market hypothesis is introduced in the process of law creation, "the market" appears to be separated. The market itself is excluded from *direct* regulation; the regulation is built *around* the "pure" market, so to speak. This happens in emissions trading schemes which are set against command-and-control mechanisms and against State-dependent taxes based on a general assumption of market efficiency (Lane 2012). It is argued that the EU Emissions Trading Directive cannot be analyzed as a compromise in a straightforward sense, since it regulates the "outside of the market." Trading, "the inside of the market," is left unregulated. This is a separating construct based on the distinction between "artificial law" versus "natural market." The construct, in so doing, separates a sphere exposed to societal construction from a sphere of natural condition. Natural conditions cannot be regulated, but impose their facticity. These movements into naturalness in market creation and maintenance may be analyzed in Boltanski's (2012) terms as pragmatic regime changes from regimes of justice and fairness (construction), into a regime evading social construction, which, in its extreme form, is a regime of force and violence (nature). This for example happens, when it is argued that States should not intervene in markets, even though the market is constructed from the very beginning.

2. Law, Economics, and (Emission) Markets

The relationship between markets and their regulation is ambivalent. On the one hand, markets promise to unfold in a self-regulating way when freed from regulatory obstacles (*laissez-faire*), and, on the other hand, markets are dependent on law and regulation defining and securing property rights, contracts, and competitiveness. This ambivalence stems from the free-market hypothesis which separates "the market" from the regulation that surrounds it. For economic sociologists, this separation is a theoretical artefact. Max Weber's work on the *lex mercatoria* documents the co-evolution of commerce and law (Swedberg 2003, 200-2). And Karl Polanyi (1944) showed that free competition-based markets did not evolve from natural local markets, but from foreign trade that was, due to its uncertainty, heavily dependent on State formation. The expansion of markets over society – the creation of domestic markets – required the intervention and the expansion of the State. Even modern financial markets are highly regulation-dependent, though this regulation is more and more provided by private institutions (Carruthers 2012). For economic sociologists, the law is an "organic part" of markets (Swedberg 2003, 192), and "everything economic also has a legal dimension" (Ford and Swedberg 2009, 3; see also Edelman and Stryker 2005). Considering this, the theoretical creation and maintenance of the economic artefact of separation deserves a closer look.

The economic ambivalence concerning regulation (in)dependency is visible in the establishment of markets for pollution rights. To economists, pollution is a negative externality. Economists, instead of demanding or prohibiting certain technologies, prefer an indirect regulatory approach: the manipulation of the price system. If one considers agents to be free, reacting to their environment in an utilitarian way, always detecting (even calculating) what would leave them better off, the obvious solution to any social problem is the manipulation of the structure of incentives. The unintended side effect of this manipulation is an expansion of regulative devices, and a growing demand for structural knowledge that tells the regulator where to manipulate and which regulating screw to adjust. (This, of course, is unsatisfactory for economists believing in the free-market hypothesis.)

When economists started thinking about economic externalities, and how they may be introduced into national accounts, they first suggested the taxation of harmful emissions and other side effects of economic action (Pigou 1920). Since taxation is a witness to the dependency on bureaucracy, economists started thinking about how to avoid this external regulator. It was Ronald Coase who turned the problem of pollution into "a problem of a reciprocal nature" (Coase 1960, 2). He showed that the problem of externalities can be left to the market actors themselves. The pollution problem should be resolved between rational contractors directly without any intermediary in cases where transaction costs are low. The one that has been harmed may compensate the one that pollutes so that he may resign from his harmful activities. Or, the one that

pollutes may compensate the one that has been harmed. The latter version depends on the existence of a legal liability (MacKenzie 2009b). With his attempt to design markets according to assumptions of economic efficiency, Coase is the founding father of the Law and Economics School (Posner 1975, 1981). The Law and Economics School calculates the effects of the law on economic efficiency on the basis of the rational economic actor and a state of equilibrium, so that the law can be designed accordingly. The attempt of this perspective is to decide whether situations can be left over to the free market or whether situations would need a certain kind of regulation. The baseline assumption is the distinction between a natural market and an artificial law, where the latter is acceptable only when markets fail (Edelman and Stryker 2005, 527-8).

The economic invention of emissions trading drove these thoughts even further. The economist J. H. Dales (1968) compared three different ways of implementing a policy concerning the problem of water pollution at the Great Lakes in Canada: regulation, subsidization, and a disposal fee. He argues that, in any case, the society would pay the rent for the pollution problem and that it is therefore necessary to search for an overall efficient solution. Companies would always pass their additional costs over to the customers, and in case of subsidies, taxes would need to rise. From this assumption, Dales deduces that "it seems more realistic to deal with society as a whole, rather than with groups," like single factories that may be accused to be guilty of water pollution alone:

> Here, however, we are dealing with what economists call 'general equilibrium' situations, in which we are all simultaneously producers *and* consumers, polluters *and* pollutees. It is then true that, no matter who passes the money to whom in the first place, we all pay in the end. (Whether we pay *equally* depends on a host of factors, such as the taxation system, individual consumption habits, and so on; but there will be individual discrepancies in the burden of pollution control no matter how the control is implemented) (Dales 1968, 83; emphasis in original).

For Dales, "everyone pollutes and everyone pays for polluting" (Dales 1968); this makes the question of how to regulate environmental pollution a question of "justice" (Dales 1968, 85): we are called to minimize the overall costs of pollution control in the name of society as a whole. What Dales promises to avoid by emissions trading is a "trial-and-error pricing" (Dales 1968, 82) and an administrative burden which he ascribes to the other three mechanisms.

> The Pollution Rights market will […] simplify administrative problems by removing the necessity of anyone's deciding what pollution charges should be […]. The administrative simplicity of the scheme is certainly one of its main attractions (Dales 1968, 97).

This is astonishing, since Dales mentions the many regulation-intensive conditions pollution markets are dependent on: there is a necessity of measuring the tons of waste, dropped by different polluters; there is the necessity of defining a scheme of equivalence to make different qualities of waste comparable and

interchangeable; there is a necessity of controlling the polluters' data and the data of the ones that control the polluters data; and there is the necessity of a trial and error pricing to get the market started in the first place. There is a necessity for market making (Abolafia 1996) – Dales writes: "the WCB [water control board] acts like a specialist on organized stock exchanges; as a buyer of last resort" (Dales 1968, 96), which implicated regulatory interventions when prices are too high or too low (compared to a baseline that has to be defined and monitored as well). These are the "technopolitical 'nuts and bolts' of the design of markets and of allocation mechanisms" (MacKenzie 2009b, 176) without which emission markets would not work. Still, these nuts and bolts remain hidden in the descriptions of how pollution markets work. In the following citation Dales invites us to think of how the pollution market, he has in mind, would work. It is an intellectual game full of assumptions and preconditions.

> Let us try to set up a 'market' in 'pollution rights.' The [water control; LK] board starts the process by creating a certain number of Pollution Rights, each Right giving whoever buys it the right to discharge one equivalent ton of wastes into natural water during the current year. Suppose that the current level of pollution is roughly satisfactory. On this assumption, if half a million tons of wastes are currently being dumped into the water system, the Board would issue half a million Rights. All waste dischargers would then be required to buy whatever number of Rights they need; if a factory dumps 1000 tons of waste per year it will have to buy 1000 Rights. To put the market into operation, let us say that the Board decides to withhold 5 per cent of the Rights in order to allow for the growth of production and population during the first year, and therefore offers 475,000 Rights for sale. Since demand is for 500,000, the Rights will immediately command some positive price – say, 10 cents each (Dales 1968, 93).

On the basis of these assumptions and preconditions, the market situation appears straightforward: the trading system would reduce the overall mitigation costs for society, because emissions would be reduced where mitigation is cheapest. But, as Michel Callon put it: "[a]s soon as [economic language; LK] leaves that world of textbooks and students, which suits it so well, it gets into trouble" (Callon 2007, 330). This is why we have to study "economists in the wild" (Callon 2007, 338) or economic "*in vivo* experiments" (Callon 2009, 536) like carbon markets. But before tackling the problem of real-world carbon markets the analytical perspective on market construction and maintenance is outlined.

3. Establishing Equivalence, Building a Compromise, Neglecting Humanity

In this article, the problem of market creation and the inherent role of law is addressed with the help of analytical tools provided by the French pragmatic approach of economics of conventions. Markets, from this perspective, are

analyzed as organized arrangements (Favereau 1989), urging for stabilization and regulation. Thus, economic coordination "requires an *absence*" of the separation between "economic" and "non-economic" dimensions (Storper and Salais 1997, 19; emphasis in original). Markets are, rather, collective and multifaceted arrangements where the problem of quality is resolved on a moment-to-moment basis. In order to produce, to sell, or to buy a product or a commodity, traders and other people engaged in the market need to establish a form of certainty at least in a rudimentary way. This certainty is established via formats of equivalence (conventions) that help to qualify the situation and thus render it decidable. The Keynesian problem of uncertainty is at the core of this perspective. It leads to the question of how things and people can be coordinated from situation to situation and how this coordination unfolds.

In order to overcome uncertainty, people invest in forms. The notion of the form covers a "range of form-giving activities" (Thévenot 1984, 2), which are stabilized by implements that may be "of a conventional technological kind, or are of a legal, scientific or other nature" (Thévenot 1984, 15). These materially equipped formats are costly investments (Thévenot 1984, 6); they are not easy to achieve, because they cover conflicts and contradictions. They establish equivalence over a diverse, heterogeneous, and thus, uncertain situation, which makes them so worthy for coordination. Forms of equivalence establish a specific order that allows ranking things and people accordingly. It leads to a tremendous gain in coordination and decidability. Once a form of equivalence is established, very different situations can be approached in an objectified way. There is no need to think about local particularities any more. They now can be treated as exceptions not bothering the form.[2]

In modern society a plurality of these forms of equivalence exists. These forms are "objectified or materially 'equipped'" and "the equipment derives from and contributes to the fixing and diffusion of a form" (Thévenot 1984, 15). In *On Justification*, Boltanski and Thévenot (2006) distinguish the six most public formats of equivalence that render things and people objective and worthy in their own specific ways (industry, market, civic, domestic, inspired, opinion). These forms of equivalence are represented by a specific assortment of objects that act as witnesses of the form. In so called "tests," by either rearranging things and people according to a form, or by criticizing a form by holding it against the objects of a situation, people frequently check out what the collective state of the situation is (Boltanski and Thévenot 2006, 131). The forms of equivalence cover historical traces of conflicts and controversies that have been civilized in each of these forms of equivalence in their own specific ways (Boltanski 2012, 75). They have been once created by compromising attempts in which contradictions have been overworked over decades of histo-

[2] This is what happens in statistical classification, too (Boltanski and Thévenot 1983; Desrosières 1991).

ry. This historical perspective is elaborated in *The New Spirit of Capitalism*, where Boltanski and Chiapello (2005) show how a new form of equivalence emerges from a compromising attempt, which is now representing an own grammar of worth: the project-based polis. Boltanski and Chiapello refer to Louis Dumont's work, which shows that the ideology of individualism emerged from compromise-building with older cultural forms (Boltanski and Chiapello 2005, 20-1).

This compromising historicity of conventions is the reason why these forms of equivalence will never erase uncertainty fully. Boltanski (2011, 57) refers to the distinction between risk and uncertainty by Frank Knight in order to explain this point. When uncertainty is turned into a calculable risk, this does not implicate full control over the event. But it renders a situation approachable and decidable. The same holds true for conventions. It means that conventions are always under construction and frequent renewal of the form investment is needed.

Very often, such attempts of testing lead into conflicts between different forms of equivalence, which may be overcome by a compromise. Building a compromise helps overcoming the ambiguity by undoing the contradiction between elements stemming from different conventional worlds without settling the conflict through recourse to an explicit test (Boltanski and Thévenot 2006, 277). For example, the incommensurability of the industrial world and the market world is encountered in economic theory-building "when time is introduced as a factor in market relations" (Boltanski and Thévenot 2006, 194). An example to illustrate this time dependency in economic coordination is the portfolio selection theory invented by Markowitz (1952). Portfolio selection addresses the problem of future price developments and its optimization, and thus the problem of risk that is inherited by a company or by an investor. It demands tracking the price developments of each asset a company holds, and it thus demands future estimations and hedging strategies that help tracking price developments over time. This is in sharp contrast to the market order, which establishes a here and now situation of exchange (an exchange that is facilitated by the form of individual competition). The portfolio selection theory and portfolio management practices, accordingly, thus, need to be understood as compromising attempts between the market and the industrial equivalence (Knoll 2012).

The same holds true for the law that is constructed in order to stabilize and form market situations. The law as a "very site of compromise" (Boltanski and Chiapello 2005, 400) bridges requirements from different worlds of equivalence. The law is in motion because it overworks and undoes contradictions. Thus, it may be decisive to understand the concrete regulatory compromises that are built into pollution markets. The economist Pigou (1920), who dealt with the problem of negative externalities in environmental pollution, argued that the State as an external regulator should define a price for pollution (taxation). In taxation, the market world and the civic world maintain a compromise, where State regulation defines the financial incentive to stimulate rational

actors' choices. In this compromise, the role of the State is clearly defined as the one who sets the price in order to achieve a certain steering effect (industry). The price appears to be a political mechanism, designed to regulate political goals on the basis of economic assumptions of agency. Thus, the price has to be set by a group of experts and negotiated politically. For a company, this means that in the end of a reporting year taxes may have to be paid according to the amount of energy that has been used, for example.

This compromise is challenged when law makers seek to keep the core of the market (the price mechanism) free from regulation. Then, market coordination is treated as if there was no regulation dependency *at the core* of the market transaction ("inside the market"). The core of the market is treated as a pure entity that is unfolding as a natural mechanism, which is in its best condition when left untouched. This is the moment where the regulative compromise of market creation is challenged and the market form is put on pure and independent grounds.

Still, in the light of reality tests, such attempts of purification must get into trouble. Reality strikes back, as we know from Callon (2007, 323). In order to establish the market as a pure entity, it is necessary to change the regime of action. Contradictions or conflicts can be very well ignored or neglected. This is why Boltanski (2012, 70) argues in favor of a distinction between a "regime of peace in fairness," which is built upon *tacit* equivalence and the "regime of dispute in justice," which requires *explicit* critique and justification in the light of equivalence. If one moves from the regime of dispute in justice towards the regime of peace in fairness, the tacit use of objects is required, of objects that demand their silent functionality and rationality. This is a state of being in which actors deny the possibility of an alternative evaluation and where they "black box" the historicity involved in conventions (Boltanski 2012, 75). From this regime of peace in fairness, it is only a small step into the regime of violence, which is "inaccessible to language" (Boltanski 2012, 73). In violence people are not any longer humans, but objects that are rearranged by the

> inhumane harshness of forces of nature. For the constraint of things, when it is no longer tolerated, can appear as imposed violence; this happens when one denounces the tacit violence of the established order, of regulation, law, technology, and so on (Boltanski 2012, 75).

The "regime of dispute in violence" does not depend on equivalence and the conventional achievements of mankind any longer. It means acting as if there was no humanity, but only things and forces involved. It means neglecting the conventional (constructed) quality of the situation. Thévenot argues that these moments can be analyzed as an engagement in the plan, which strives for "governing by objective objectives" (Thévenot 2012, 8), or an engagement where people are "relying with blind faith on the marker of the guarantee," neglecting the sacrifice of the market form (Thévenot 2011, 36). To me it is important that we observe a *naturalization* that is applied with "pragmatic

versatility" (Thévenot 2001, 407). Regulators and other market observers move from the regime of construction, where the objects stemming from different worlds are put together and equivalence is crafted, into a regime where this ambivalence and human construction is neglected all of a sudden. Economic law makers, neglecting the construction of markets that are constructed (like markets for pollution rights obviously are), and referring to the "nature of the market," perform an argumentative movement that can be analyzed as a regime change from the conventional regimes of justice (were the free-market hypothesis fails to pass any reality test) into a regime of natural forces (were the free-market turns to be a biological constant).

Such an analytical perspective can be applied to the debate whether the European Commission should "repair" the European market for emission rights and take responsibility for its permanent over allocation. The European trading scheme is currently carrying a surplus that "could reach 2 billion allowances by 2013" (EU Commission 2012). In the forefront of the poll of the European parliament on April 16th, 2013, on the question whether the EU Commission should "backload" a certain amount of allowances in order to induce scarcity (or a less over-allocation), basically two political positions opposed each other (Knoll 2013, 67):

1) The birth defects of the system need to be repaired. Without a significant price for carbon there is no climate friendly steering effect. Energy from dirty coal combustion gets relatively cheaper compared to clean renewable energy and flexible combined heat and power plants that may flank the renewable energy mix. The companies that have been investing in coal plants get rewarded.
2) Emissions trading works as it has been planned. That the politically defined cap has proofed to be too high indicates a progress in climate change mitigation, since it means that less greenhouse gases have been emitted than planned. The climate does not care whether emissions are reduced due to an economic crisis or due to environmental investments. Furthermore, market intervention is principally problematic and to be rejected.

The Commission's appraisal to backload allowances (position 1) has been declined on April 16th with a slight majority. The baseline argument of the opponents (position 2) was that States should not intervene in markets – even so they are constructed. This argumentation involves more than just a compromising attempt. It is a movement from the compromise (acknowledging the construction of the market) into an argument that neglects its construction. To sum up, contradictions involved in market creation can be resolved via compromise-building *and* via neglecting the constructedness – the compromise – of the market.

4. The Hidden Bureaucracy of Carbon Markets. Lessons from the European Emissions Trading Scheme

The following chapters ask about the consequences of such regulatory attempts that leave the core of the market unregulated. The European Emissions Trading Scheme (EU ETS) is taken as an example for law and market creation. It is the first *international* trading scheme for industrial and energy installations worldwide (Skjærseth and Wettestad 2008; Bailey 2010). First, it is shown that the European directive, setting up the European market for emission allowances, is systematically *not* addressing the aspect of trading itself. Instead, the contextual preconditions of the market are addressed. In order to set up the market for emission rights, an administrative bureaucracy is set in place, which secures that the core of the market can be left unregulated. This leads to a demand for form-investments at the company level in order to overcome the uncertainty involved in emissions trading.

4.1 The EU Directive Regulates the "Outside of the Market"

The nuts and bolts of the European carbon market are defined in the "DIRECTIVE 2003/87/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community." The directive establishes a compromising regulative attempt, where climate change is defined as a political problem of justice that will be addressed jointly and divided into faire shares of reduction targets (civic), by means of measuring, calculating, and monitoring industrial emission levels (industry), which are then made tradable among single installations that are considered to be rational competitors (market). Even so, *trading* is at the heart of the of the directives purpose; *trading* is the only element that remains unregulated. Trading itself is black boxed in economic assumptions of the free market and it is left over to the rational actors (the "inside of the market").

The "outside of the market," quite to the contrary, is intensively regulated. A competent authority (Art. 18) is required at the national level, which makes sure that all installations covered by the European Directive are registered participants of the trading scheme, and that all installations establish a monitoring scheme on a yearly basis that is verified by a verifier that first has to be accredited by an authority. The national authority is responsible to "harmonise communication on the monitoring plan, the annual emission report and the verification activities between the operator, the verifier and competent authorities" (Art. 14, 4). The directive defines what categories of industrial and combustion activities are covered by the scheme (Annex I), which greenhouse gases are covered (Annex II), how monitoring and reporting of the emission levels of each installation "either by calculation or on the basis of measure-

ment" is to be accomplished (Annex IV), and how the process of verification is to be organized (Annex V). It has to be defined who the protagonists of the market are, what is to be traded on this market. Demand has to be created via monitoring and reporting, self-interest seeking with guile has to be diminished by verification and penalties, and transparency has to be established via public access to the information of emission levels of each installation (§ 13). In order to create liquidity on the market, the sellable good needs to be portioned into small and tradable shares: one "tonne of carbon dioxide equivalent," which is defined as "one metric tonne of carbon dioxide (CO_2) or an amount of any other greenhouse gas listed in Annex II with an equivalent global-warming potential" (Art. 3, j). Carbon has become the baseline currency into which other greenhouse gases can be turned at a fixed exchange rate (MacKenzie 2009a; Descheneau 2012). And last but not least, it has to be defined how the tradable allowances are distributed, and how many allowances should be allocated for free, what share of allowances should be auctioned, and what share of allowances the "market maker" (the European Commission) should keep for new entrants (Art. 10a, 7). In order to organize these market-making activities, the European trading scheme is portioned into trading phases, ranging from Phase I (2005-2007), to Phase II (2008-2012), over to Phase III (2013-2020), with Phase IV already envisioned in the European "2030 framework for climate and energy policies."

The EU Commission states: "The flexibility that trading brings ensures that emissions are cut where it costs least to do so" (EU Commission 2014). This argument does not account for the regulatory and bureaucratic infrastructure needed to bring this "free market flexibility" into existence. The efficiency-claim (Lane 2012) is based on economic assumptions that address the "inside of the market" only. The "inside of the market" has been left unregulated and is handed over to the rational actor and its calculative capacities.

4.2 The "Inside of the Market" is Left Unregulated

Given the range of regulations that the EU Directive establishes, there remain a lot of things unregulated. These are the things that remain hidden in the economic assumption of the "rational actor" and "the market," which are expected to operate on their own accounts. First, what is left open is the question of how actors, companies or installations could come to an appraisal of their "CO_2 abatement costs." Only if companies know the cost of reducing one ton of carbon equivalent, is it possible to set this cost factor in relation to the market price and thus come to a rational decision, which in the end is expected to render the whole mechanism efficient on an *overall* level. The rational agent must know if he/she should better reduce emissions in his/her own installation park or if it is cheaper to sell or buy emissions on the market. This is not an easy-to-decipher item. The percentage of companies answering the question

"Are you familiar with your company's costs of reducing CO_2 emissions?" with "Yes" is around 30 percent in the consecutive trading years from 2005 to 2007 in a survey covering companies from four European countries (Engels 2009, 492). In order to decide whether to sell or buy allowances, or whether to reduce emission levels the punctual market situation which may indicate that *right now*, exactly in this moment (market convention), it would be rational to sell allowances or invest in carbon mitigation measures; it can be completely different in the future (industrial convention).

Leaving the economic actor alone with this uncertainty, establishes a demand for a service industry offering solutions for documentation, calculation and/or trading (Engels et al. 2008, 284; 2009, 496). About 20 percent of the European companies decided to outsource their emissions trading strategy to a professional service provider in the beginning of Phase I (Engels et al. 2008, 283).

That it is everything but straightforward to design an emissions trading strategy show qualitative case studies that have been conducted at 16 European companies in four European countries (Germany, the United Kingdom, the Netherlands, and Denmark) in 5 industrial sectors (energy, food, refinery, mineral, public education, health). The case studies have been conducted between December 2007 and June 2008.[3] The case studies show that trading can unfold in quite different modes (see Table 1). There are companies that take a systematic and calculative stance towards emissions trading, and companies that refrain from systematization. Companies that developed a systematic trading strategy used the language of "optimization," which refers to the portfolio concept aforementioned. Interestingly, "optimization" can be interpreted in different ways. The risk-taking variant is oriented towards the price gaps and decouples price-developments from the physical demand and production cycles. The risk-avoiding variant is coupling trading decisions closely with the demand for emissions rights and with the industrial production cycle. For example, one company with a long position in EUAs engaged in systematic *selling* (not buying and selling) the superfluous allowances (which is not very risk-taking, but systematic). It is a company that can predict its demand for emission rights on a relatively stable basis. It produces dairy products under the European milk quota system. This industrial-civic complex renders the gas consumption level predictable "one year or two years in front," as the energy sourcing leader of the dairy states. Superfluous allowances can thus be sold, which is done on the basis of a systematic price-gap oriented selling strategy aiming at revenue maximization.

[3] The presented outcomes stem from the research project "A cross-national comparison of institutional factors on economic action of companies (exemplified by emission trading)," funded by the German Research Council DFG, 2006-2009, grant No. EN 488/2-1, directed by Anita Engels at the University of Hamburg.

Other companies engaged in trading, which cannot be named "strategy." Trading in these cases is not based on a *systematic* tracking of the demand/price relation (which is the basis for calculating the CO_2 abatement costs). Their trading behavior was rather spontaneous and emotional (brave/anxious) and based on guesses and speculation.

One company that kept its superfluous allowances was not able to predict its demand for emission rights on such a stable basis, even though it was also producing under a political quota system, in this case under the system of European fishing quotas. Anyhow, the "raw material" in this case of a Danish fish meal factory is much less reliable, which makes carbon trading an uncertain task. The energy manager of a Danish fish meal factory justifies his trading activity (he was not selling any allowance, even though he had more allowances than he needed):

> It's because of the fish. […] We are very much dependent on raw material. Everything done here is based on raw material. And it's partly political decisions, but it's actually more, well it's changing from year to year, in some years some kind of species are very numerous and some years it's not. And it's really, it's really changing a lot (Energy manager of a Danish fish meal factory).

Even so, in the fishmeal case, the attempt was a calculative one: the unpredictability of the demand situation made the energy manager develop a cautious stance towards trading, which in the end left him with a non-decision. He did not sell emission rights in the first trading phase. When he was ready to sell, the price for carbon has been broken down.

Table 1: Emissions Trading Behavior in the EU ETS

Uncertainty/Risk	Engagement	EUA Short Position	EUA Long Position
systematic transformation in a calculative risk (calculation)	risk-taking	systematic price-gap-oriented trading (selling and buying)	*no case*
	risk-avoiding	systematic sourcing strategy	systematic selling strategy (but not buying and selling)
no systematic transformation in a calculable risk (no calculation)	brave	spontaneous selling based on "gut feeling" buying late (speculating on break down of price in the end of the trading phase)	early and quick selling of superfluous allowances
	anxious	early buying, in order to be on the safe side	keeping superfluous allowances

Based on the analysis of 16 company case studies in 4 European countries and 5 industrial sectors.

Table 1 shows that trading emission allowances are loaded with uncertainty that need to be turned into a decision, which economic actors may achieve on quite different calculative and emotional basis. In particular, the calculative and systematic variant, which is informed by portfolio management "optimization"

is a rather work intensive matter. The rational decision that is left to the intelligence of the market leads to a tremendous work load shifted over to the economic actors that are confronted with the impertinence of tracking the "information" of the price and to turn this "information" into a rational decision that in the end will render the whole market "efficient" (which is in some sectors a bigger impertinence than in others; see also Knoll and Engels 2012; Engels and Knoll 2013). In a way, the workload of price setting has been handed over from the central State and expert groups (as in case of taxation) to the operators of roughly 11,000 European installations that now have to track the price information and the workload. Decision making in emission markets in many cases involves what Michael Power calls a "restless metrological drama at the organizational level […] acted out by accountants, actuaries, economists, consultants" (Power 2004, 767).

It is true that one aim of the European Commission has been fulfilled: "By putting a price on carbon and thereby giving a financial value to each ton of emissions saved, the EU ETS has placed climate change on the agenda of company boards and their financial departments across Europe" (EU Commission 2014). The awareness has certainly been raised. But it remains an open question if and how this awareness for short-term price volatility will lead into long-term investments in technological carbon-reduction measures. This link between carbon trading and investments in clean technologies and processes is completely handed over to the black box of "the market."

The European Commission and its role as a "market maker" is a second aspect of leaving the "inside of the market" unregulated. In a certain way, the European Commission is not acting as a professional financial institution. After the first break down of the EUA price in May 2006, after the emission reports of all installations had been published the first time, and it got obvious that the market is over allocated, dissatisfaction with the European Commission as a market maker escalated. The energy trader of a big Danish energy company mentioned:

> Compared to other commodity markets, I would say, that one thing definitely has to be changed. That is all sorts of politicians coming up with all sorts of comments and also leakage of information. It has to be organized like the currency market like in Europe and the rest of the world. There is only one institution that can make a decision and make a comment on the market, because otherwise you get all sorts of possibilities of misuse of the market. When the price went from 23 to 0 Euros, some people in the EU came out with the information one or two days before it just has been given. And the information only went out to some people. Not because they really thought about it, I think, just because they didn't know what they were doing. This still goes on. I think there are a lot of people, they did not know what they are doing, politicians in the EU. They don't know how big impact it has on the market, when the information is leaked. That has to be changed. It has to be made illegal to come out with information that has such a big impact on the market. When it comes to figures for how much has been emitted. These things have to be

> changed. As you know, in other markets, in the oil markets and stuff, people are sitting and looking for the same figures, like how much is in storage, and how much is not, what is going to happen and this and that. And now, people are trying to find certain points of interest in the CO_2 market. But it's still very difficult to know, what to look for at what time, because information flows around like it does (Energy trader of a Danish power company).

This means that markets in pollution rights, like Dales invented them in 1960s, political actors like the "water control board", or in our case the European Commission, lack the understanding and the consciousness of what it takes to build a financial market. These political institutions lack a well-defined consciousness concerning the fact that the statistical information about overall emission levels provided by institutions like the European Environmental Agency is of high importance to market analysts. Selective launching of information, in "normal" financial markets, is regulated as an infringement against the prohibition of insider trading.

Notwithstanding, the European Commission is very aware of its responsibility of market making and price maintenance, which can be seen in the debate about "backloading" allowances (EU Commission 2012). But there seems to remain an underestimation of the regulatory intensity that emission markets, and financial markets in general, entail, in order to secure something like "informational justice". This unconsciousness may be connected to the separation between the "inside" and the "outside" of the market. The "outside of the market" is of the regulators business whereas the "inside" is not. Then, the organizing of the cap of overall emission rights belongs to the outside conditions of emission markets, whereas the question of informational justice – and what it takes to define a trading situation – rather belongs to the domain of trading itself, which has been left unregulated.

5. Conclusion

The conventional formatting of the market is neglected in important and influential parts of economic theory and it is neglected in day-to-day and political language, which is even more important. The quasi-natural state of the market is deeply anchored in our language. If we speak about "the market" it seems that forces of nature broke upon us. It is as if words fail to grasp and to understand. It is as if we are speechless and powerless against these forces and no one can be blamed guilty. If this is right, then the problem of market creation cannot be understood as a problem of critique and compromise-building, alone. Marketization, then, unfolds via pragmatic movements between active and compromising law creation into regimes of engagement where the world is not only objectified but also naturalized. In the work of Boltanski, naturalization is

a mode of action belonging to the regime of dispute in violence, since it excludes rules and conventions (Boltanski 2012).

This neglecting of a regulatory dependency of markets is consequential. It leads to the paradox effect that the free-market hypothesis produces as an unintended consequence, what it wants to avoid: bureaucracy. The law of emissions markets leaves its core function *trading* unregulated (as in this article has been shown for the EU Directive). Because the determination of the price for carbon is left over to the intelligence of the market, a need for investing in calculative forms at the company-level emanates. This is the reason why there is a substantive causal relation between marketization and (private) bureaucratization. The law based on economic assumptions of market efficiency and general equilibrium leaves the "inside of the market" unregulated. This is compensated by an intensive regulation of the "outside of the market" and by private actors' regulative attempts at the "inside of the market." Without rules and implements, actors are exposed to a rather high level of uncertainty. It leaves the economic actor with the impertinence of finding substitutes for the missing regulative certainty in carbon markets and makes them investing in forms of calculation and documentation. It can be concluded that emissions trading certainly raises the awareness for carbon at industrial sites, but it does not raise efficiency. It leads to bureaucratic attempts at the outside and at the inside of the market – along the theoretical separation between natural markets and artificial law.

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